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Investigating Turkey High School Graduates' Attitudes towards Technology

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Abstract

Computers have been integrated into almost all areas of our daily lives. Serious problems stem from the fact that elementary and secondary school students in general have taken none or inadequate computer classes and as such, their awareness of efficient computer usage has not been adequately addressed. During university education, students have been observed experiencing hardships using computers for research and document preparation, due to their prior use of computers having consisted mostly of accessing social media and games. The current study investigated 2013-2014 high school graduates' attitudes regarding technology, the computer programs they used and their usage frequency, reasons for why they use the Internet and social media and their usage frequencies, and their basic computer skills at university level. The participants of the current study were students who had just entered various departments and language preparation levels at Fatih University, Istanbul, Turkey. 250 Participants were randomly selected. Data for the current study were collected through a Basic Computer Skills Questionnaire, an application for determining the levels of participants' basic computer skills. Significant benefits are foreseen for students entering universities as helpful computer users with awareness attained during elementary or secondary education. Additionally, particularly for students who prefer non-social majors, it will be very useful to have learned a programming language and an algorithm at basic levels. The Internet as a medium for potentially leading to a diverse range of problems today requires conscious users.

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1. Introduction

Rapid changes in science and technology, the increasing need for information and reduced prices for technology devices such as computers has resulted in a range of changes in many social areas. Based on these changes, the characteristics of individual needs in the society are different. The most-impacted individuals in this change process are elementary and secondary school students and the youth. These technologies need to be learned in the right and in useful ways; on the other hand, students need to be raised with an awareness of the potential dangers from excessive and uncontrolled use. The computer, currently one of the world's leading technologies, is an educational device used on many levels for a range of different types of education. It is also used as a tool in our daily lives (Erkan, 2004). The positive impact of technology and in particular the computer in terms of achievement is obvious. Studies show that students' attitudes toward computers and computer use are significant factors for achievement in computer-supported education (Kulik and Kulik, 1987). Technology developments have changed the structure of the educational process and have provided a new perspective on the understanding of education (Keser, 1991). In today's schools, planned instruction has gained importance through the application of learning instead of teaching, learner-centred applications as opposed to teacher-centred applications, learning objects instead of board and chalk and access to information through investigation instead of memorizing information from a single source. Therefore, the need for interactive learning mediums continues to increase (Şanlı, Sünkür and Arabacı, 2011). In terms of the contemporary technology, a technology-literate individual is aware of his/her relationship within society. Therefore, while implementing educational and instructional activities, for this to be beneficial, the required infrastructure for educating individuals who could adequately make use of technology, including technology subjects in the curricula of elementary and higher education, should be put in place (Bacanak, Karamustafaoglu and Köse, 2003; Kahraman, Köse and Kara, 2005; Köse, Gencer and Gezer, 2007). For the effective and efficient use of computer technologies in an educational system, the interacting individuals' attitudes, towards and the perspectives of technology and technology tools play an important role. Negative attitudes of users, such as teachers and students or decision-making administrators, feature among the barriers to the use of contemporary innovations in educational systems (Bindak and Çelik, 2006; Deniz, 2005). Studies conducted show that computer use in education positively effects students' achievement and attitudes (Barnea and Dori, 1999; Sanger, Phelps and Fienhold, 2000; Jimoyiannis and Komis, 2001; Kulik and Kulik, 1991). Computer use in education has been found to improve higher order thinking skills and increasing achievement; therefore, students learn with comprehension rather than memorization (Renshaw and Taylor, 2000). A review of studies concerning students' attitudes towards technology and computers show that attitudes are associated with factors such as gender, age, motivation, school type, owning a computer and experience in computer use (Ray, Sormunen and Haris, 1999; Soyibo and Hudson, 2000; Jeong, 2001; Erkan, 2004; Rajasekar and Vaiyapuri, 2007; Fančovičová and Prokop, 2008; Yeşilyurt and Gül, 2011). Some studies show that computers are effectively used in many fields such as physics (Pektaş, Çelik, Katrancı and Köse, 2009; Fiolhais and Trindade, 1998), chemistry (Falvo, 2008; Talib, Matthews and Secombe, 2005), biology (Meir, Perry, Stal, Maruca and Klopfer, 2005; Stith, 2004), geography (Özcan, 2008; Çelik, 2007), language (Ateş, 2005) and medical education (Friedl, Preisack, Klas, Rose, Stracke, Quast, Hannekum, and Gödje, 2002).

The current study investigates the technology attitudes and status of computer and Internet use among prep school students and freshmen registered in a private university in Istanbul for the period 2013-2014. Sub questions for the research purposes were determined as follows.

2. Research Questions

1. Is there a significant gender difference between students' attitudes and views toward technology and computer use?
2. Is there a significant difference between students' attitudes and views toward technology and computer use in relation to school types?
3. Is there a relationship between students' technology attitudes and computer ownership?
4. For what purpose and how frequent do students use computers?
5. For what purpose and how frequent do students use the Internet?
6. For what purpose do students use social networks the most?

7. At what levels are students' Internet access and computer ownership?

3. Methods

3.1. Population and Sample

The current study comprises descriptive research investigating high school graduates' technology attitudes and their computer use status. The survey method used in the current study employed 250 student participants randomly selected among students who had entered various departments in Fatih University in autumn of 2013-2014. Research details concerning participant students' school, gender, age, computer ownership and prior computer training are presented in Table 1.

Table 1. Students' demographic details

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Female	135	54.0	54.0	54.0
	Male	115	46.0	46.0	100.0
Age	17	16	6.4	6.4	6.4
	18	127	50.8	50.8	57.2
	19	56	22.4	22.4	79.6
	20 +	51	11.2	11.2	100.0
	General High School	53	21.2	21.2	21.2
Finished school type	Vocational HS	68	27.2	27.2	48.4
	Anatolian HS	109	43.6	43.6	92.0
	Other	20	8.0	8.0	100.0
	Yes	178	71.2	71.2	71.2
Computer ownership	No	72	28.8	28.8	100.0
Previous computer training?	Yes	110	44.0	44.0	44.0
	No	140	56.0	56.0	100.0

3.2. Instrument

In this research, a questionnaire, "Attitudes Towards Technology", developed by Akbaba-Altun (2002) was used, which had a Cronbach-Alpha reliability of 0.91. This questionnaire consisted of 37 items that were rated using a Likert-type scale from 1 to 5, where 1 represented 'totally disagree' and 5 represented 'totally agree'.

4. Findings

1. Is there a significant gender difference between students' attitudes and views toward technology and computer use?

No significant gender difference was observed between students' attitudes and views toward technology and computer use according to the scores obtained on the technology attitude scale ($p > 0.5$).

2. Is there a significant difference between students' attitudes and views toward technology and computer use in relation to school types?

An ANOVA test was conducted in order to analyse if there was a difference between students' attitudes and views toward technology and computer use in relation to school types finished for scores obtained on the technology attitude scale. A significant difference in terms of school types was observed ($p < 0.5$). In order to see the difference between school types, a multi-comparison Scheffé test was conducted and differences between General HS ($\bar{X}=109,2$) and Vocational HS ($\bar{X}=125,1$), Anatolian HS ($\bar{X}=104,27$) and Vocational HS ($\bar{X}=125,1$) and Other ($\bar{X}=121,4$) HS types were observed.

3. Is there a relationship between students' technology attitudes and computer ownership?

No significant difference between students' technology attitudes and computer ownership was observed for scores obtained in the technology attitude scale ($p > 0,5$).

4. For what purpose and how frequent do students mostly use computers?

Students who responded to the question about the purpose and frequency of computer use provided that they used it *often* and *very often*. Students' answers respectively included, starting from the most frequently done activity, the following: *access to internet* (77.2%), *listening to music* (62.8%), *studying, doing homework* (60%), *watching movies* (52.8%), *examining educational materials* (35.6%), *project development* (26.8%), *playing games* (25.6%), *studying with different computer programs* (19.6%) and *studying about a programming language* (15.2%).

It was observed that today, students' activities such as access to internet, listening to music, studying, doing homework, watching movies, examining educational materials, project development, playing games, studying with different computer programs and studying about a programming language were not at required levels. This reminds the questions about elective information technologies classes and students' interest in them. This was explicitly noticed in cases where assignments, reports and research needed to be prepared. The clearest evidence of students not being raised as users with awareness was that they did not set time aside for useful activities. These students were individuals who started their days with smart phones, tablets and computers, and kept these devices at close hand. In addition, lack of adequate programming language and algorithm teachings at schools was a problem for students who were enrolled in science, computer and engineering majors. Students who responded to the question about basic computer skills provided that they used it *well* and *very well*. Students' answers respectively included, starting from the most frequently done activity, the following: *browser use* (84.8%); *Microsoft Word use* (62.8%); *Microsoft Power Point use* (60.2 %); *Windows operating system-general computer use* (58%); *Microsoft Excel use* (45.2%); *Outlook use* (34.8%); *graphic animation programs* (20%); *web design* (16.8%); *a programming language* (15.5%).

5. For what purpose and how frequently do students mostly use the Internet?

Students who responded to the question about the purpose and frequency of Internet use provided that they used it *often* and *very often*. Students' answers respectively included, starting from the most frequently done activity, the following: *following social networks (Facebook, Twitter, etc.)* (66.2%); *watching movies, listening to music and playing games* (60.8%); *reading and responding to emails* (55.2%); *reading news* (46.8%); *researching and examining educational materials* (36%); *following distance education classes or certificate programs* (15.2%); *shopping* (14.8%); *online banking etc.* (5.2%). Students were observed to use the Internet and social networks, watch movies, listen to music and follow entertainment tools such as games excessively, whereas research and the like were not at desired levels. If this is not attended to in the future, it will become harder for them to be quality, conscious and efficient technology users. A conscious and informative technology education provided at elementary and secondary levels will facilitate the solution for this problem. People will continue to visit online entertainment and conversation mediums; however, spending more time on these than on studying will create problems for them in the future.

6. For what purpose do students use social networks the most?

Students stated that they mostly used social networks for the following purposes: *chatting with friends* (20.6%); *sharing information* (19.04%); *learning about diverse cultures and places* (13.86%); *contribute to education levels* (12.56%); *sharing video* (9.46%); *playing games* (8.16%); *participating in discussions* (5.57%); *doing collective activities* (4.53%); *because I cannot express myself in other ways* (2.07%).

7. At what levels are students' Internet access and computer ownership?

71.2% Of the students stated that they owned computers. The internet access types/locations that students had were the following: *mobile device* (37.30%); *home* (31.44%); *campus* (24.41%); *internet cafe* (3.71%); *other places* (3.12%).

5. Conclusion and Discussion

Students must be provided with the use of information technologies through an instructional process in order for them to be educated as thinking, researching, questioning and discussing individuals. Therefore, educational applications of computer use must be widespread and students need to be educated about effective computer use in education. The responsibility at this point falls on administrators, teachers and families. In the process where computers and Internet technologies are used as tools of teaching/learning, students' attitudes and opinions about computers, software and Internet use will be useful in evaluating reflections of technology in education. The current study investigated university attending students' attitudes towards basic computer, Internet and technology use at

universities where computers, software and the Internet are widely applied. Students presenting positive attitudes in programs where computers, software and the Internet are actively used will develop into educated and well-rounded individuals demanded by the sector (Kose et al., 2007). Aktas, Alioglu and Vardar's study (2007) on university students showed similar results and indicated that students used information technologies for listening to music, playing games, watching movies or chatting rather than doing homework and studying. Kose et al., (2007) investigated the attitudes of students newly entering vocational college towards computer and Internet use and compared independent variables of major, gender, ownership of computer and Internet access. Results of the study showed that students had positive attitudes towards computer and internet use. According to the results, male students had more positive attitudes towards computer and internet use than female students. Students with computers and internet access had more positive attitudes towards computer and internet use. It was observed that students mostly used The Internet for studying and email purposes. These results are consistent with previous results in technology use (Barnea and Dori, 1999; Sanger, et.al. 2000). Yesilyurt and Gul's (2011) study investigating secondary school students' views and attitudes toward computers and computer use showed that a large majority of the participants had positive attitudes. Among high schools, a significant difference was observed between general high schools and the Anatolian High School for Teaching. The researchers also obtained findings showing that, except where it was needed for an assignment, students used computers for chatting, games, music and videos, accessed via the Internet. Sanli et al. (2011) investigated second level students' experience in using information technologies at elementary schools in urban and rural parts of Malatya. The study results showed that elementary second level urban and rural area students' views about using information technologies were distinctly different from one another. Rural area students were observed to have used information technologies mostly for games and entertainment purposes. These results supported previous research on attitudes for technology use. Kahraman's study (2011) investigating education faculty students' purposes and frequencies of computer use and views on computer use for educational purposes showed that a large majority of the students used computers only when needed, while pre-service teachers used computers mostly for accessing news and information. Students used computers a few times a week for classes and each time spent on average an hour doing so. Students were observed to have thought that computers were very useful educational tools, as they emphasized visuals, saved time and provided large and fast access to the information sought. However, students also stated as disadvantages of computers that they impacted negatively on their social lives, caused health problems and were expensive. The current study, conducted via a questionnaire with 250 randomly-selected participants entering various majors at Fatih University in autumn of 2013 showed that the majority of the students (71.2%) owned computers. Of these students, 44% stated that they had previously received computer training and 56% indicated no training. University students with no prior computer training signal the need for reorganization of national elementary and secondary education.

6. Suggestions

The positive attitudes of students toward computer and Internet use will facilitate learning computer and informational technologies more effectively and eagerly as educational tools. Within this context, the following suggestions are put forward: the most effective ways of using computers and the Internet in educational settings must be investigated. The importance of having computers at schools and in our business domains must be emphasized through compulsory computer training at educational institutions via systematically planned and relevant courses. In addition, laboratories and required equipment in educational institutions must be provided and updated as needed. Particularly, since the majority of students own computers and do not have internet access, universities must be well informed about students' computer use, Internet access and conscious use. Software actively used in the market could be included in the curriculum; alternatively, new software aimed at the sector requirements may be developed. Through activities, students may be motivated to participate in project competitions. Another important point is that instructional designers and technologists who receive computer technologies education must be employed as active experts at schools in order to develop computer supported and multi-instructional models via new technologies.

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